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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/028,276	12/28/2001	Shunpei Yamazaki	740756-2414	2826

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EXAMINER

PIZIALI, JEFFREY J

ART UNIT	PAPER NUMBER
2673	4

DATE MAILED: 12/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/028,276

Applicant(s)

YAMAZAKI ET AL.

Examiner

Jeff Piziali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/144,538.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figure 24 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 7, 9, 10, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Riggio, Jr. (US 5,452,250).

Regarding claim 1, Riggio discloses an electronic device [Fig. 3; 34] comprising a nonvolatile memory [Figs. 5A & 5B; 60-1 to 60-n], wherein the nonvolatile memory comprises a memory element [Fig. 5A; 60-1], and wherein the memory element comprises a first thin film transistor [Fig. 5A; FGT1] comprising a floating gate and a second thin film transistor [Fig. 5A; FGT2] (see Column 4, Line 5 - Column 6, Line 14).

Regarding claim 2, this claim is rejected by the reasoning applied in the above rejection of claim 1; furthermore Riggio discloses a source electrode [Fig. 1; 14] and a drain electrode [Fig. 1; 16] of the memory element comprise the same material [i.e. aluminum] as that of a gate electrode [Fig. 1; 12] of the first thin film transistor (see Column 2, Lines 32-65).

Regarding claim 7, this claim is rejected by the reasoning applied in the above rejection of claim 2.

Regarding claim 9, Riggio discloses each of the first thin film transistor and the second thin film transistor comprises a semiconductor layer comprising a source region [Fig. 2; 14], a drain region [Fig. 2; 16], a low concentration impurity region [Fig. 2; 26 & 28], and a channel region [Fig. 2; 24] (see Column 2, Line 32 - Column 3, Line 23).

Regarding claim 10, this claim is rejected by the reasoning applied in the above rejection of claim 9.

Regarding claim 13, Riggio discloses the first thin film transistor is a n-channel FAMOS type thin film transistor and the second thin film transistor is an n-channel switching thin film transistor (see Figs. 1 & 2; Column 1, Lines 37-50). Riggio does not expressly disclose a p-channel FAMOS type thin film transistor. However, at the time of invention, p-channel FAMOS type TFTs were a well known and commonly understood design alternative to n-channel FAMOS type TFTs. Therefore, it would have been obvious to one skilled in the art at the time

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of invention to substitute Riggio's n-channel FAMOS type TFT with a p-channel FAMOS type TFT, as a matter of transistor design choice.

Regarding claim 14, this claim is rejected by the reasoning applied in the above rejection of claim 13.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riggio, Jr. (US 5,452,250) in view of the prior art disclosed in the instant application.

Regarding claim 17, Riggio does not expressly disclose the electronic device is one of the group consisting of a projection display system, a video camera, a still camera, a head mount display, a car navigation system, a personal computer, and a portable information terminal. However, the instant application's admitted prior art discloses the electronic device being one of the group consisting of a projection display system, a video camera, a still camera, a head mount display, a car navigation system, a personal computer, and a portable information terminal (see Page 2, Line 30 - Page 3, Line 11). Riggio and the instant application's admitted prior art are analogous art, because they are from the shared field of semiconductor memory devices. Therefore, it would have been obvious to use Riggio's memory device with one of the above

listed electronic devices, so as to protect some commercially popular electronic devices from data loss in the event of power disruptions.

Regarding claim 18, this claim is rejected by the reasoning applied in the above rejection of claim 17.

6. Claims 3-6, 8, 11, 12, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riggio, Jr. (US 5,452,250) in view of Tanaka et al. (US 5,798,744) and Gutierrez (US 4,305,083).

Regarding claim 3, this claim is rejected by the reasoning applied in the above rejection of claim 1; however, Riggio does not explicitly disclose a semiconductor display device comprising a pixel region comprising a plurality of pixel thin film transistors, wherein gate electrodes of the plurality of pixel thin film transistors, the floating gate, and a gate electrode of the second thin film transistor comprise the same material.

Tanaka does disclose a semiconductor display device [i.e. liquid crystal display] comprising a pixel region [Fig. 1; 40] comprising a plurality of pixel thin film transistors [Fig. 2; 101], and wherein gate electrodes [Fig. 2; 113] of the plurality of pixel thin film transistors are made of aluminum (see Column 5, Line 37 - Column 6, Line 10). Moreover, Gutierrez discloses an aluminum floating gate [Fig. 2; 21] (see Column 1, Lines 9-28). Riggio, Tanaka, and Gutierrez are analogous art, because they are from the shared field of transistor based circuitry.

Therefore, it would have been obvious to one skilled in the art at the time of invention to use Gutierrez' aluminum floating gate as Riggio's floating gate, so as to utilize an inexpensive,

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electrically conductive electrode material; and further to use this combined nonvolatile memory with Tanaka's display device, so as to store display information in such a manner that it can be recovered/restored following a power loss.

Regarding claim 4, this claim is rejected by the reasoning applied in the above rejection of claims 1-3.

Regarding claim 5, this claim is rejected by the reasoning applied in the above rejection of claim 3.

Regarding claim 6, this claim is rejected by the reasoning applied in the above rejection of claim 3.

Regarding claim 8, this claim is rejected by the reasoning applied in the above rejection of claim 2.

Regarding claim 11, this claim is rejected by the reasoning applied in the above rejection of claim 9; furthermore Tanaka discloses each of the pixel thin film transistors comprises a semiconductor layer comprising a source region [Fig. 3; 120], a drain region [Fig. 3; 130], a low concentration impurity region [Fig. 3; 135], and a channel region [Fig. 3; 110] (see Column 5, Line 53 - Column 6, Line 10).

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Regarding claim 12, this claim is rejected by the reasoning applied in the above rejection of claims 9 and 11.

Regarding claim 15, this claim is rejected by the reasoning applied in the above rejection of claim 13.

Regarding claim 16, this claim is rejected by the reasoning applied in the above rejection of claim 13.

7. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riggio, Jr. (US 5,452,250) in view of Tanaka et al. (US 5,798,744) and Gutierrez (US 4,305,083), and further in view of the prior art disclosed in the instant application.

Regarding claim 19, this claim is rejected by the reasoning applied in the above rejection of claim 17.

Regarding claim 20, this claim is rejected by the reasoning applied in the above rejection of claim 17.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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9. Claims 9-12 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. The term "*low* concentration impurity region" in claims 9-12 is a relative term which renders the claim indefinite. The term "*low* concentration impurity region" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear given present claim language, what precisely constitutes a "*low* concentration impurity region" versus, for instance, a "*high* concentration impurity region."

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Iwahashi (US 5,008,856), Kanbara (US 5,036,231), Yoshizawa et al. (US 5,040,147), Kodama (US 5,274,602), Glenn (US 5,274,602), Yamada et al. (US 5,278,428), Ochii (US 5,315,546), Koyama et al. (US 5,321,286), Ozawa (US 5,477,068), Akiyama et al. (US 5,493,139), Riggio (US 5,523,970), Iwahashi (US 5,610,858), and Young (US 5,621,683) are cited to further evidence the state of the art pertaining to electronic devices.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (703) 305-8382. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (703) 305-4938. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.



J.P.

2 December 2003



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